

## REMARKS

### I. PENDING CLAIMS AND SUPPORT FOR AMENDMENTS

Upon entry of the present amendment, claims 8-15 will be pending in this application.

### II. REJECTION UNDER 35 U.S.C. § 112, SECOND PARAGRAPH

In paragraph 3 of the Office action, the Examiner has rejected claims 10 and 12 as being indefinite under 35 U.S.C. § 112, second paragraph. Applicants respectfully traverse this rejection and request reconsideration and withdrawal thereof.

The Examiner contends that claims 10 and 12 are outside the scope of claim 8, because they indicate that the presence of phosphorus is optional. The Examiner apparently contends that claim 8 requires the presence of phosphorus.

In the last response, Applicants amended claim 8 to unambiguously indicate that the fiber recited in the claim could contain either a  $P_2O_5$  former,  $B_2O_3$  former, or both. Applicants also clearly indicated at page 4 of the response that the amendment to the claims was intended to clarify that it was not necessary for both formers to be present. Since claim 8 is clear that either or both formers may be present, a claim that indicates that one of the formers is optional is not outside the scope of claim 8.

Applicants submit that the claim language clearly delineates the metes and bounds thereof, and that the claims are unambiguous and in compliance with 35 U.S.C. § 112, second paragraph. Accordingly, the Examiner's rejection should be withdrawn.

### III. REJECTIONS UNDER 35 U.S.C. § 102

#### A. Jensen et al.

In paragraph 5 of the Office action, the Examiner has again rejected claims 8-15 as anticipated by Jensen et al. (U.S. Patent Nos. 5,691,255; 5,614,449; WO 95/29135). Applicants respectfully traverse this rejection and request reconsideration and withdrawal thereof.

First, Jensen et al. does not disclose or even suggest that inclusion of  $P_2O_5$  former,  $B_2O_3$  former, or both, in the recited amounts, will produce inorganic fibers having a shrinkage of less than 3.5% when exposed to a temperature of 1000 °C for 24 hours and a shrinkage of less than 3.5% when exposed to a temperature of 800 °C for 24 hours. That Jensen et al. failed to recognize any connection between the presence of the claimed amounts of  $P_2O_5$  former,  $B_2O_3$  former, or both is evidenced by the disclosure in Jensen et al. of other compositions that do not contain such formers, or are outside the claimed ranges, but that are acceptable for the purposes of Jensen et al., namely as horticultural growing media, sound and heat insulation, filler, etc.

Second, the Examiner will note that the Examples cited by the Examiner further show that Jensen et al. were not in possession of the recited invention. For instance, Examples 1 and 4 include amounts of  $B_2O_3$  that are outside the range recited in claim 8. In Jensen et al. Example 1B, the amount of MgO is greater than 10 wt%, but the expression in (1)(a) of claim 8 equals -2.4, and is not  $> -2.4$  as recited in claim 8. Example 3 contains MgO in an amount less than 10 wt%, but expression (1)(b) in claim 8 calculates to -6.2, which is not greater than -2.4. Similarly, for Example 3A,

this expression calculates to  $-5.1$ . Clearly, Jensen et al. did not recognize, either explicitly or implicitly, the need to include  $P_2O_5$  or  $B_2O_3$  formers in the recited amounts in order to increase the refractoriness of their fibers.

Because an anticipatory reference must teach, within its four corners, every limitation of the claim, and because Jensen et al. clearly fails to provide any teaching of increasing the refractoriness of inorganic fibers, Applicants respectfully submit that the Examiner's rejection should be withdrawn.

B. Thelohan et al.

In paragraph 6 of the Office action, the Examiner has rejected claims 8, 9, 13, and 14 as anticipated by Thelohan et al. (U.S. Patent Nos. RE 35,557 and 5,250,488). Applicants respectfully traverse this rejection and request reconsideration and withdrawal thereof.

The Examiner has apparently missed the point of Applicants' argument that there is a world of difference between insulating a duct or grill and insulating the interior of a furnace or kiln. Applicants are well aware that the claims do not recite a method for insulating a furnace or kiln. The claims do, however, recite a method for increasing the refractoriness of a fiber by altering the composition of the melt used to make the fiber. If one is insulating a duct or grille, as is Thelohan, there is no need to increase the refractoriness of the fiber. Fibers used to insulate a duct or grille are not routinely exposed to temperatures in excess of  $1000^\circ\text{C}$  for 24 hours, and so need not exhibit shrinkage characteristics at such an exposure that ensures combustion gases will not contact and damage the duct or grille.

Fibers used to insulate a kiln or furnace, on the other hand, are exposed to such conditions, and there is thus a motivation to modify their compositions so as to achieve service temperature characteristics fundamentally different from those needed for insulating a duct or grille.

Thus, the fibers disclosed in Thelohan are not refractory fibers, as this term is used in the claims. Disclosure of a method of making the Thelohan fibers is therefore not the same as the claimed method of increasing the refractoriness of refractory fibers by altering the composition of the melt.

With respect to fiber claims 13 and 14, Applicants once again note that these claims recite lower limits on concentration of CaO that are well above the amount of CaO present in Example 3 of Table 1 of Thelohan. Accordingly, there can be no anticipation of these claims. The Examiner has not addressed this argument in his Office action.

C. Karppinen et al.

In paragraph 7 of the Office action, the Examiner has rejected claims 8-15 as anticipated by Karppinen et al. (U.S. Patent No. 5,843,854 and WO 92/09536). Applicants respectfully traverse this rejection and request reconsideration and withdrawal thereof.

As with Thelohan et al., a fiber that provides "heat insulation" is not the same as a refractory fiber. Applicants have previously pointed out that Karppinen et al. is concerned with providing insulation against the type of heat and sound required in the construction industry, and with increasing saline solubility of the fibers, not with providing refractory insulation suitable for the inside of a furnace or kiln. These two

types of insulation are fundamentally different, and in making his anticipation rejections, the Examiner has failed to account for this difference.

One does not use refractory fibers in the to insulate against normal changes in room temperature, or to provide sound insulation. Refractory fibers are designed and engineered for a specific purpose: to provide insulation against environments whose temperatures are much, much higher than room temperature, and to do so consistently, and with low shrinkage, so as to prevent damage to the insulated material. Thelohan simply does not disclose that any of his fibers have this property, and there is every reason to expect that they do not, given their disclosed low temperature utility.

Because, like Jensen et al. and Thelohan et al., Karppinen et al. fails to teach or suggest all of the limitations of Applicants' claims, it does not anticipate the claims, and the rejection should be withdrawn.

D. Holstein et al.

In paragraph 8 of the Office action, the Examiner has rejected claims 8-15 as anticipated by Holstein et al. (U.S. Patent Nos. 6,060,414; 6,037,284; and WO 93/22251). Applicants respectfully traverse this rejection and request reconsideration and withdrawal thereof.

As with Jensen et al., Thelohan et al., and Karppinen et al., Applicants have argued that Holstein et al. is silent with respect to any increase in refractoriness resulting from adding phosphate or borate formers to the fiber composition. The Examiner has replied that the method claims merely require the presence of these components in the composition. However, the claims clearly recite adding one or

both of these components to the composition so as to obtain a fiber having increased refractoriness, more specifically, having a shrinkage of less than 3.5% when exposed to a temperature of 1000 °C for 24 hours and a shrinkage of less than 3.5% when exposed to a temperature of 800 °C for 24 hours. Holstein et al. is silent in this regard.


With regard to the fiber claims, the Examiner has failed to establish any likelihood that the fibers recited in Table 1 of Holstein et al. will possess the shrinkage characteristics recited by the claims. Certainly no shrinkage results are presented in Holstein et al. Moreover, the Holstein et al. fibers possess varying amounts of materials not disclosed in Applicants' specification as being present in fibers having the desired shrinkage characteristics, such as TiO<sub>2</sub>. The Examiner's apparent conclusion that the fibers of Holstein et al. would inherently possess the shrinkage characteristics recited in the claims is therefore based on mere speculation.

In light of the above, Applicants do not see why they should bear the burden of supplying the Examiner with proof that the Holstein fibers possess properties different from those of Applicants' claims. Holstein does not disclose refractory fibers, as this term is used in the claims, and is silent with respect to the properties recited in the claims. Holstein discloses the inclusion of materials that are not recited in Applicants' claims. There is absolutely no basis for inferring that the Holstein fibers possess the refractory properties that Applicants recite, and so no need for Applicants to bear the burden of selecting and preparing Holstein fibers, testing them, and risk the Examiner deciding that the tests are somehow insufficient because the "wrong" fibers were tested.

Applicants respectfully submit that the claims are in condition for immediate allowance, and an early notification thereof is earnestly solicited. If the Examiner believes that any issues remain to be resolved, he is requested to contact the undersigned at 404.815.6218 prior to issuance of any Advisory Action so that said issues can be addressed.

Please charge any fees or credit any overpayment to Deposit Order Account No. 11-0855.

Respectfully submitted,



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